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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,463	02/05/2002	Kazuyoshi Amami	56937-045	4920

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EXAMINER
ESTRADA, MICHELLE

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 08/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/062,463	Applicant(s) AMAMI ET AL.	
	Examiner Michelle Estrada	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 21-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7-14 and 23* is/are allowed.

6)☒ Claim(s) *1-5,21,22 and 24* is/are rejected.

7)☒ Claim(s) *6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *27 May 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Applicant's arguments are moot in view of the new grounds of rejection.

Drawings

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 5/27/03 has been approved.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 21, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ono et al. (6,103,551), Cobbley et al. (6,329,832) and further in view of Dominic et al. (5,972,735).

Ono et al. disclose a connecting step of flip-chip mounting a semiconductor device (6) onto a substrate (9); a bonding step of bonding a region of said semiconductor device to a region of said substrate by means of an adhesive, each of said regions not being involved in electrical connection; and sealing said semiconductor device and said substrate by means of a sealing resin (2) (Col. 6, lines 1-25); wherein

said connecting step includes electrically connecting an electrode pad (3) of the semiconductor device to a terminal electrode (8) of the substrate using an electrically conductive adhesive.

Ono et al. do not disclose a testing step of performing a test of electrical properties on said semiconductor device and said substrate that are connected to each other; and separating said semiconductor device from said substrate after heating a bonding place of said adhesive up to a temperature higher than a glass transition point or a melting point of said adhesive if it is determined that said electrical properties are poor in said testing step, and sealing said semiconductor device and said substrate by means of a resin if it is determined that said electrical properties are good in said testing step.

Cobbley et al. disclose a testing step of performing a test of electrical properties on said semiconductor device and said substrate that are connected to each other (Col. 3, lines 1-3); and separating said semiconductor device from said substrate (Col. 3, lines 10-20) if it is determined that said electrical properties are poor in said testing step (Col. 6, lines 54-58), and sealing said semiconductor device and said substrate by means of a resin if it is determined that said electrical properties are good in said testing step (Col. 3, lines 32-34 and Col. 5, lines 34-48); wherein said bonding step includes curing said adhesive (Col. 2, lines 50-55).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ono et al. and Cobbley et al. to enable formation of the semiconductor unit.

Cobbley et al. do not specifically disclose that the separation step is done after heating a bonding place of said adhesive up to a temperature higher than a glass transition point or a melting point of said adhesive.

Dominic discloses heating the adhesive to soften the adhesive and making a separation step (Col. 1, lines 35-36 and Col. 3, lines 44-45).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ono et al., Cobbley et al. and Dominic to enable formation of the separation step and further make it more conducive to receiving the chip.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ono et al., Cobbley et al. and Dominic as applied to claim 1 above, and further in view of Tsukahara (6,051,093).

The combination of Ono et al., Cobbley et al. and Dominic does not disclose wherein the electrically conductive adhesive comprises a thermoplastic; wherein said adhesive comprises a thermosetting resin; and wherein said adhesive is cured at a temperature lower than said glass transition point of said adhesive in said bonding step.

Tsukahara discloses bonding a circuit element (10) to a circuit board (4) by an adhesive sheet (21) of thermosetting resin or a thermoplastic resin (Abstract and Col. 8, lines 40-45); and wherein said adhesive is cured at a temperature lower than said glass transition point of said adhesive in said bonding step (Col. 5, lines 43-47).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ono et al., Cobbley et al., Dominic and Tsukahara to enable formation of the adhesive material.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ono et al., Cobbley et al. and Dominic as applied to claim 1 above, and further in view of Kohara et al. (4,654,966).

The combination of Ono et al., Cobbley et al. and Dominic does not disclose wherein said adhesive used in said bonding step comprises a low melting point metal.

Kohara et al. disclose that a low melting point metal is a suitable material for adhesive material (11); bonding flip-chips (6) mounted on the module base board (7) and metallic plates (12) (Col. 6, lines 24-30).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ono et al., Cobbley et al., Dominic and Kohara et al. to enable formation of the adhesive layer.

Allowable Subject Matter

Claim 6 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7-14 and 23 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is (703) 308-0729. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

George Fourson
Primary Examiner
Art Unit 2823

MEstrada
July 31, 2003